	Application No.	Applicant(s)
Notice of Allowability	09/955,295	RICHER ET AL.
	Examiner	Art Unit	
	Vikkram Bali	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *7/19/2005*.

2. ☒ The allowed claim(s) is/are *1, 3-4 (renumbered as 1-3)* .

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some*   c)☐ None of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a)☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1)☐ hereto or 2)☐ to Paper No./Mail Date _____ .

    (b)☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

In response to the amendment filled on 7/19/2005, all the amendments have been

entered and the action follows:

EXAMINER'S AMENDMENT

1.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Alexandra Daoud, # 55,992 on 12/19/2005.

The application has been amended as follows:

In Specification:

Please replace paragraph [009] by the following amended paragraph:

[009] According to a first broad aspect of the present invention, there is provided a
method for performing camera position approximation. A method is taught for finding
the position pf an object in front of a camera. The starting point is an image taken by
the camera in question for which the position is unknown. Three points are selected on
the image and are projected into an image space by Intersecting them with the known
focal point from the image. The relationship between these three points Is known. A
first point, point A, is selected arbitrarily on a first of the three *rays* produced. Point A is
preferably selected close to the image plane. A second point, point: B, is found on a
second of the three rays by respecting the known distance between two of the points
selected on the Image plane. In order to determine the location of point C, a' circle is
drawn, its axis on a path AB land its radius such that known distance AC and BC are
respected. Point C is then identified as the point on the circle that is closest to the third

ray,- wherein point A, point B, and point C define the device position and define its x, y, z coordinates; and wherein orientation angles Ω, Φ, and κ can be calculated from the x, v, z coordinates of the points A, B, C. thereby defining the camera position.

In Claims:

Claim 1, line 7, replace – "plane." – with –"plane;"—

Claim 3, line 7, replace –"said internal parameters and said external

parameters"— with –" internal parameters and external parameters"—

Allowable Subject Matter

2.   Claims 1, 3-4 (renumbered as 1-3) are allowed.

3.   The following is an examiner's statement of reasons for allowance:

Independent claim 1 is allowed because the prior art taken alone or in

combination with fails to disclose or teach the method of performing camera position

approximation for determining poison of a device to capture an image that include

identifying three points in image captured by camera, wherein three points have a

known relationship and image becomes an image plane; projecting three points rays

into an image space by intersecting each of three points with a known focal point of

image plane; choosing a point A on a first of three points' rays at a location near image

plane; based on known relationship, identifying a point B on a second of three points'

rays; drawing a circle with its center axis on a path AB and its radius such that known

distances between points A and C and points B and C are respected; choosing a point

C on circle closest to a third of three point rays; repeating choosing a point A so as to

find a closest point C to a third of three points' rays; wherein point A point B, and point C

define device position and define its x, y, z coordinates; and wherein orientation angles

Ω, Φ, and κ can be calculated from said x, y, z coordinates of points A, B. C thereby

defining camera position in combination to the other limitations of the claim.

Independent claim 3 is allowed because the prior art taken alone or in

combination with fails to disclose or teach the method for performing a precision

estimation of a measured three-dimensional coordinate based on Monte-Carlo

simulation that include choosing a three-dimensional point in an Imaged space and

calculating there dimensional point's theoretical position in the image planes, whereby

point becomes a simulation point, calculating reference points' positions in image

planes; acquiring tolerances for internal parameters and external parameters from a

system database; adding a suitable amount of error to positions and parameters in

simulation, wherein said error is determined according to tolerances; reconstructing said

simulation point based on its position in images obtained through simulation, internal

parameters and external parameters and producing a three-dimensional coordinate;

and comparing said three dimensional point with three-dimensional coordinate

produced by reconstruction to obtain precision estimation, in combination to the other

limitation of the claim.

Any comments considered necessary by applicant must be submitted no later·

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Vikkram Bali whose telephone number is 571.272.7415.

The examiner can normally be reached on 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jingge Wu can be reached on 571.272.7429. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Vikkram Bali
Primary Examiner
Art Unit 2623

vb
December 19, 2005